NON-PUBLIC?: N
ACCESSION #: 9009040256
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Peach Bottom Atomic Power Station - Unit 3 PAGE: 1 OF 4

DOCKET NUMBER: 05000278

TITLE: Manual Scram Due To Loss Of Condenser Vacuum Following Isolation Of Offgas Recombiner Caused By a Component Failure
EVENT DATE: 07/27/90 LER #: 90-008-00 REPORT DATE: 08/27/90

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 080

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
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COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: WF COMPONENT: PC MANUFACTURER: F130
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On 7/27/90 at 0350 hours, with Unit 3 operating at 100% power, an offgas recombiner isolation occurred causing the main condenser vacuum to begin decreasing. A fast reactor power reduction was initiated in accordance with the procedure for a loss of main condenser vacuum. At 0403 hours, with Unit 3 at approximately 80% power, a manual scram was initiated by placing the mode switch in shutdown following the receipt of an 'A' channel reactor auto half scram signal. A Group II and Ill isolation occurred as d result of the manual scram. Other safety systems performed as designed. An offsite radioactive gaseous release amounting to 23.5% of Technical Specification limits occurred during post scram recovery. There were no adverse health threats to onsite personnel or the general public. The cause of the failure appears to be a component/system failure in the offgas recombiner condensate cooling water pressure control system. The design of the system will be evaluated to determine the exact cause of the failure and the appropriate measures required to

correct the problem. There was one previous similar event.

END OF ABSTRACT

Requirements for the Report

This report is required per 10CFR50.73(A)(2)(iv) because of a manually initiated scram and resulting primary containment isolation.

Unit Condition At Time of Event

Unit 3 was in the run mode at approximately 80% power dt the time of the Manual scram.

Description of Event

On 7/27/90 at 0350 hours, with Unit 3 operating at approximately 100% power, an offgas recombiner (EIIS:WF) isolation occurred causing the main condenser (EIIS:SG) vacuum to begin decreasing. After an unsuccessful attempt to reset the isolation, a fast reactor power reduction was initiated in accordance with procedure GP 9-3, "Fast Reactor Power Reduction."

At 0401 hours with Unit 3 at approximately 80% power an 'A' channel reactor auto half scram signal (EIIS:JC) was received due to the rapidly decreasing Main condenser vacuum. At 0403 hours, Unit 3 was manually scrammed by placing the mode switch in the "SHUTDOWN" position. A Group II and III primary containment isolation (EIIS:JM) occurred as expected due to void collapse upon insertion of the control rods, when reactor water level decreased below the zero inch level (172 inches above top of active fuel). Reactor vessel (EIIS:RPV) level was manually controlled with the reactor core isolation cooling system (EIIS:BN) and the high pressure Coolant injection system (EIIS:BJ) until the reactor pressure was reduced, allowing the condensate system to maintain reactor level. Shortly following the shutdown, difficulty was encountered by plant operators in restoring the electrical feed to certain non-safety related 480 volt load centers (EIIS:EC) causing, in part, a partial loss of the drywell chillers (EIIS:BK) which resulted in d slight increase in drywell pressure. By 0430 hours, the feed was restored to drywell chillers and drywell pressure returned to normal.

At 0538 hours, an unusual event was declared by Shift Management due to a spike of the offgas sample piping radiation level to 800mR/hr caused by the offgas recombiner isolation. The unusual event was terminated at

0600 hours.

At 0607 hours, during preparation to re-establish main condenser vacuum, offgas was vented from the condenser to the Turbine Building (EIIS:NM) and eventually exhausted by the Unit 2 and 3 vent stacks. This was a result of the main condenser previously becoming slightly above atmospheric pressure following the shutdown on Unit 3. Additionally, as a result of the pressurization of the main condenser, excessive turbine seal steam was drawn off by the steam packing exhausters (EIIS:TC) directly to the main offgas stack. This resulted in a"Stack Gas High Radiation" alarm at 0615 hours. The main offgas stack radiation levels subsequently decreased below the alarm setpoint (less than 100 counts per seconds) at 0735 hours.

Analysis of the Event

At approximately 0615 hours the net corrected main offgas stack radiation level peaked at approximately 288 counts per second (CPS) and the Unit 2 and Unit 3 vent stacks peaked at approximately 4000 and 90,000 counts per minutes (CPM) respectively. The total offsite release was 23.5 percent of the allowable Technical Specification limit. These releases were short in duration (less than one hour) and represented no danger to site personnel or the general public.

The isolation of the non-safety related offgas recombiner and the subsequent decrease in the main condenser vacuum was not a safety concern. The automatic scram signal on loss of main condenser vacuum prevents damage to the main turbine. The manual scram initiated as a result of this event was conservative in that manual action was taken prior to automatic functions being challenged.

Cause of the Event

The isolation of the recombiner system was a result of a loss of condensate cooling water flow to the recombiner condenser. The cause of the loss of condensate cooling water was a system/component failure. Investigation following the offgas recombiner system isolation revealed that the pressure control valve (EIIS:PCV) (CV-3-5-9386A) for the recombiner condensate cooling water inlet had failed closed due to a broken linkage in its associated pressure controller (EIIS:PC). During normal operation, the pressure controller experiences pressure pulsations as the condensate cooling water system inlet pressure is reduced from as high as 700 psig down to 120 psig by the pressure control valves. It is believed that these pulsations Caused the failure of the linkage in the

pressure controller. Subsequent to this event, additional linkage failures were identified on the redundant Unit 3 pressure controller (only one pressure controller is used during normal operation) and on one of the Unit 2 pressure controllers. This cooling system had been installed as modification to the recombiner system during the mid-1980's.

Corrective Actions

The broken linkage on the Unit 3 recombiner condensate cooling water inlet pressure controller was replaced. The air supply to CV-3-5-9386A was isolated and the control valve is now manually throttled to control the inlet pressure of condensate cooling water. The system operating procedure was revised to reflect the above operating conditions.

The design of the system will be evaluated to determine the exact cause of the system/component failures and the appropriate measures required to correct the problem.

Previous Similar Events

One previous similar event was identified. LER 3-85-07 reported an event in which an automatic scram occurred as a result of a loss of main condenser vacuum. The cause of the loss of vacuum was the failure to replace a plug on a feedwater heater relief valve following maintenance. The corrective actions involved installing the missing plug and therefore could not have been expected to have prevented the event reported in this report.

CCN 90-14156

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PEACH BOTTOM-THE POWER OF EXCELLENCE

August 27, 1990

Docket No. 50-278

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Licensee Event Report
Peach Bottom Atomic Power Station - Unit 3

This LER concerns manual SCRAM due to loss of condenser vacuum following isolation of the offgas recombiner caused by component failure.

Reference: Docket No. 50-278
Report Number: 3-90-008
Revision Number: 00

Event Date: 07/27/90
Report Date: 08/27/90
Facility: Peach Bottom Atomic Power Station
RD 1, Box 208, Delta, PA 17314

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv).

Sincerely,

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